

# **METHOD AND APPARATUS PROVIDING ADAPTIVE LEARNING IN AN ADAPTIVE ORTHOGONAL FREQUENCY DIVISION MULTIPLEX COMMUNICATION SYSTEM**

## **ABSTRACT OF THE DISCLOSURE**

Disclosed is a method to operate an orthogonal frequency duplex multiplexing (OFDM) communications system, and an OFDM system that operates in accordance with the method. The method includes, when transmitting data over a plurality of OFDM sub-channels from an OFDM transmitter (12A) to an OFDM receiver (12B) through a channel (24), operating an adaptive learning automaton (50) to adjust values of modulation coding scheme (MCS) switching thresholds so as to maximize at least one selected performance criterion; based on the values of the switching thresholds, selecting a MCS and modulating data with the selected MCS and transmitting the modulated data over at least some of the sub-channels. The method further includes receiving the data at the OFDM receiver and demodulating the received data using a demodulator that corresponds to the selected MCS.